

CLAIMS

What is claimed is:

1. A method of communicating data from a low security assurance source to a high security assurance destination comprising:
 - 5 receiving data from a low security assurance source according to a communication protocol and transferring the data to a high security assurance destination according to the communication protocol;
 - receiving a high end acknowledgment according to the communication protocol from the high security assurance destination;
 - 10 generating an acknowledgment trigger signal in response to the high end acknowledgment; and
 - generating a low end acknowledgment according to the communication protocol in response to the acknowledgment trigger signal.
- 15 2. The method of claim 1 further comprising:
 - determining whether to generate an acknowledgment trigger signal.
3. The method of claim 2 wherein determining whether to generate the acknowledgment trigger signal comprises:
 - 20 determining whether the high end acknowledgment includes information data; and
 - generating no acknowledgment trigger signal if information data is included in the high end acknowledgment.

4. The method of claim 2 wherein determining whether to generate the acknowledgment trigger signal comprises:
 - determining whether the low security assurance source is authorized to receive acknowledgments; and
 - 5 generating no acknowledgment trigger signal if the low security assurance source is not authorized.
5. The method of claim 1 further comprising:
 - delaying the acknowledgment trigger signal in order to delay generation of the low end acknowledgment.
- 10 6. The method of claim 1 wherein the acknowledgment trigger signal includes header data for generating the low end acknowledgment.
7. The method of claim 6 further comprising:
 - generating the low end acknowledgment from an acknowledgment template; and
 - 15 populating the low end acknowledgment with the header data from the acknowledgment trigger signal.
8. The method of claim 1 wherein the acknowledgment trigger signal is a binary enable signal.
9. The method of claim 8 further comprising:
 - 20 tracking a sequence of plural data transmission units transferred to the high security assurance destination; and
 - generating the acknowledgment trigger signal if the received high end acknowledgment corresponds to a next unacknowledged data transmission unit in the tracked sequence.

10. The method of claim 8 further comprising:
tracking multiple sequences of plural data transmission units
transferred to the high security assurance destination;
referencing one of the tracked sequences that corresponds to a
5 time interval in which the high end acknowledgment is received; and
generating the acknowledgment trigger signal if the received high
end acknowledgment corresponds to a next unacknowledged data
transmission unit in the referenced sequence.
11. The method of claim 8 further comprising:
10 tracking header data for each data transmission unit in a sequence
of plural data transmission units transferred to the high security
assurance destination;
generating the low end acknowledgment from an
acknowledgment template in response to the acknowledgment trigger
15 signal; and
populating the low end acknowledgment with the header data for
a next unacknowledged data transmission unit in the sequence.
12. The method of claim 8 further comprising:
tracking header data for multiple sequences of plural data
20 transmission units transferred to the high security assurance destination;
generating the low end acknowledgment from an
acknowledgment template in response to the acknowledgment trigger
signal;
referencing the header data of one of the tracked sequences that
25 corresponds to a time interval in which the acknowledgment trigger
signal is received; and

populating the low end acknowledgment with the header data for a next unacknowledged data transmission unit in the referenced sequence.

13. A system for communicating data from a low security assurance source to a high security assurance destination comprising:
- 5 a first communication interface receiving data from a low security assurance source according to a communication protocol and transferring the data to a high security assurance destination according to the communication protocol;
- 10 a second communication interface receiving a high end acknowledgment according to the communication protocol from the high security assurance destination;
- an acknowledgment trigger generating an acknowledgment trigger signal in response to the high end acknowledgment; and
- 15 an acknowledgment generator generating a low end acknowledgment according to the communication protocol in response to the acknowledgment trigger signal.
14. The system of claim 13 wherein the acknowledgment trigger determines whether to generate an acknowledgment trigger signal.
- 20 15. The system of claim 14 wherein the acknowledgment trigger determines whether the high end acknowledgment includes information data and generates no acknowledgment trigger signal if information data is included in the high end acknowledgment.

16. The system of claim 14 wherein the acknowledgment trigger further comprises:
an authorization list identifying low security assurance sources
that are authorized to receive low end acknowledgments;
the authorization list being referenced to determine whether an
intended recipient of the high end acknowledgment is authorized to
receive acknowledgments; and
the acknowledgment trigger generating no acknowledgment
trigger signal if the low security assurance source is not identified in the
authorization list.
- 10 17. The system of claim 13 wherein the acknowledgment trigger further comprises:
a delay that delays the acknowledgment trigger signal for a
random time period in order to delay generation of the low end
acknowledgment.
18. The system of claim 13 wherein the acknowledgment trigger signal includes
header data for generating the low end acknowledgment.
19. The system of claim 18 wherein the acknowledgment generator generates the
low end acknowledgment from an acknowledgment template and populates the
low end acknowledgment with the header data from the acknowledgment trigger
signal.
- 20 20. The system of claim 13 wherein the acknowledgment trigger signal is a binary
enable signal.

21. The system of claim 20 wherein the acknowledgment trigger further comprises:
a sequence list that tracks a sequence of plural data transmission
units transferred to the high security assurance destination;
the sequence list being referenced to determine whether the
5 received high end acknowledgment corresponds to a next
unacknowledged data transmission unit in the tracked sequence; and
the acknowledgment trigger generating the trigger signal if the
received high end acknowledgment corresponds to the next
unacknowledged data transmission unit in the referenced sequence list.
- 10 22. The system of claim 20 wherein the acknowledgment trigger further comprises:
plural sequence lists that tracks multiple sequences of plural data
transmission units transferred to the high security assurance destination;
one of the plural sequence lists being referenced that corresponds
to a time interval in which the high end acknowledgment is received; and
15 the acknowledgment trigger generating the acknowledgment
trigger signal if the received high end acknowledgment corresponds to a
next unacknowledged data transmission unit in the referenced sequence
list.
- 20 23. The system of claim 20 wherein the acknowledgment generator further
comprises:
a header data list that tracks header data for each data
transmission unit in a sequence of plural data transmission units
transferred to the high security assurance destination;
the acknowledgment generator generates the low end
25 acknowledgment from an acknowledgment template in response to the
acknowledgment trigger signal; and

the acknowledgment generator populates the low end acknowledgment with the header data from the header data list for a next unacknowledged data transmission unit in the sequence.

24. The system of claim 20 wherein the acknowledgment generator further
5 comprises:
- plural header data lists that tracks header data for multiple sequences of plural data transmission units transferred to the high security assurance destination;
- the acknowledgment generator generates the low end
10 acknowledgment from an acknowledgment template in response to the acknowledgment trigger signal;
- one of the plural header data lists that corresponds to a time interval in which the acknowledgment trigger signal is received being referenced for header data of one of the tracked sequences; and
- 15 the acknowledgment generator populates the low end acknowledgment with the header data from the referenced header data list for a next unacknowledged data transmission unit in the sequence.
25. A system for communicating data from a low security assurance source to a high security assurance destination comprising:
- 20 means for receiving data from a low security assurance source according to a communication protocol and transferring the data to a high security assurance destination according to the communication protocol;
- means for receiving a high end acknowledgment according to the communication protocol from the high security assurance destination;
- 25 means for generating an acknowledgment trigger signal in response to the high end acknowledgment; and

means for generating a low end acknowledgment according to the communication protocol in response to the acknowledgment trigger signal.

26. The method of claim 1 wherein the communication protocol is an acknowledgment based communication protocol.
27. The method of claim 1 wherein the acknowledgment based communication protocol is a handshaking protocol.
28. The method of claim 1 wherein the high security assurance destination is a software process.
29. The system of claim 13 wherein the first and second communication interfaces are network interfaces.
30. The system of claim 13 wherein the first and second communication interfaces are software communication interfaces.
31. The system of claim 13 wherein the high security assurance destination is a software process.
32. The system of claim 13 wherein the system is a network device.
33. The system of claim 13 wherein the system is an output port.
34. The system of claim 13 wherein the system is an embedded software component.